The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte PIUS GRUENENFELDER, HANS HIRSCHER, URS SCHWENDENER and WALTER HAAG

Appeal No. 2004-2216
Application 08/902,331

ON BRIEF

Before WARREN, OWENS and WALTZ, *Administrative Patent Judges.*

WARREN, *Administrative Patent Judge.*

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 35 through 37 and 44, and refusing to allow claim 45 as amended subsequent to the final rejection.

Claim 44 illustrates appellants' invention of certain circular target bodies for a magnetron source, and is representative of the claims on appeal:

44. Circular target body for a magnetron source, the target body comprising a cylinder-body with a central opening, one end face of said body being symmetrically concavely tapered towards the axis of said cylindrical body through said opening to thereby define a new atomization surface, F_1, in the form of a concave, substantially bell-shaped sputtering surface, a

backside of said body being formed by a flat annular outer ring-surface and an inwardly recessed flat circular center surface, an amount of taper d_0 being defined by

$$0.2\ r_1 \leq d_0 \leq 0.54\ r_1$$

wherein r_1 is the radius of said cylindrical body.

The examiner has rejected appealed claims 35 through 37, 44 and 45 under 35 U.S.C. § 112, first paragraph, written description and enablement requirements (answer, pages 3-5).[1]

Appellants state that the appeal can be decided upon appealed claim 44 (brief,[2] page 9), and thus, we so decide this appeal. 37 CFR § 1.192(c)(7) (2002); *see also* 37 CFR § 41.37(c)(1)(vii) (effective September 13, 2003; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

We affirm the ground of rejection under § 112, first paragraph, written description requirement, and reverse the ground of rejection under § 112, first paragraph, enablement requirement. The decision of the examiner is affirmed.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief and reply brief for a complete exposition thereof.

Opinion

Considering first the ground of rejection under § 112, first paragraph, written description requirement, it is well settled that while the written description in the specification does not have to describe a later claimed invention *in haec verba*, such written description "must . . . convey with reasonable clarity to those skilled in the art that . . . [the inventor] was in possession of the invention." *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1323, 56 USPQ2d 1481, 1483 (Fed. Cir. 2000) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991)). Where the later claimed invention is based on a limitation that may not be entirely clear in the written description in the application, appellants must establish that the application "necessarily" describes the later claimed subject matter such that one skilled in the art would recognize such a disclosure therein. *Purdue Pharma,* 230 F.3d at 1327,

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[1] As appellants recognize, the objection to the specification under 35 U.S.C. § 132 and other formal matters set forth in the final action mailed October 2, 2002 (page 5), are petitionable and thus not before us.

[2] We consider the supplemental brief filed April 2, 2003.

56 USPQ2d at 1485-87, and cases cited therein. Whether one skilled in the art would immediately discern in the written description of the prior application the limitations of the invention claimed in the present application is a factual inquiry that is determined on a case-by-case basis. *Purdue Pharma,* 230 F.3d at 1323, 56 USPQ2d at 1483.

We initially find that the examiner has established that, *prima facie*, as a matter of fact, appealed claim 44 encompasses embodiments outside the scope of the written description in the specification, including the drawings, as originally filed and thus has established a *prima facie* case with respect to this statutory provision. *See generally, In re Alton*, 76 F.3d 1168, 1175-76, 37 USPQ2d 1578, 1583 (Fed. Cir. 1996). This is because the examiner has established that, *prima facie*, the alleged relationship in the specification between "d_{113}" and "a" does not allow a "target taper" as stated in the matter inserted at page 11 of the specification in the amendment filed February 10, 2000 (pages 1-3), since specification **FIG. 1** shows a "gap" between "the upper surface of the target and the lower limit of distance a," and on this basis concludes that "when determining the amount of taper the difference between d_{113} and a will give a value that is greater than d_0 since it will also include the gap" (answer, pages 4-5).

Accordingly, since a *prima facie* case of non-compliance with the written description requirement of § 112, first paragraph, has been established by the examiner, we have again evaluated all of the written description provided in the specification and accompanying drawings as a whole based on the record as a whole, giving due consideration to the weight of appellants' arguments in the brief and reply brief and the Declaration of Walter Haag under 37 CFR § 1.132, filed January 18, 2002.

Appellants submit "it is clear that the relationship of Claim 44 was inherent and reasonably conveyed to the person of ordinary skill" in the original disclosure, pointing to the "importance of the atomization surface of the target body as defining the process space and the obtaining of preferred surface ratios" of maximal thickness d_1 of the target body to target body radius r_1; maximal distance d_{113} from new atomization surface to the surface of a circular workpiece and the workpiece diameter ϕ_{13}; and target body radius r_1 and workpiece radius r_{13} (brief, page 13). Appellants allege that the "original disclosure clearly established the relationship between the distance a and the maximal distance d_{113}," contending that there is "a

clear disclosure of a relationship between d_{113} and a which applicants have chosen to call d_0," a matter that is "merely nomenclature, i.e., what one skilled in the art would designate from certain of the illustrated parameters" (*id.*).

Appellant further submit that "[q]uestions raised regarding the 'gap' are not germane in any real sense to the basic disclosure and would not have led, as Mr. Haag's Declaration clearly demonstrates, to a taper and radius relationship other than as set forth in Claim 44" (*id.*, page 15). Appellants point out that "the drawings in a patent are intended for skilled artisans," in this respect, contend that as disclosed at specification "page 4, lines 5-17, . . . the recovery frame 9 and the target body 1 are electrically insulated with respect to each other given that they operate at different potentials" and "[t]he exaggerated 'gap' in Fig. 1 accomplishes that and is sized, as is well known, to do so without plasma burning on the gap; i.e., the 'dark space distance' reference at page 7, line 23 of the Specification" (*id.*, page 14). Thus, appellants argue that "[I]n relation to the other relevant dimensions a and d_{113}, the gap is a negligible amount in calculating the taper d_0," contending that

> [t]he presence or absence of an undimensioned "gap" in Fig. 1, which merely shows what amounts to a dividing line or small space (*about 0.5 to 1 mm in actual practice*) between the target body 1 and frame 9 to indicate electrical insulation (as described at page 4, lines 5-13 of the Specification), is irrelevant. It is the more substantial difference between the target body's maximal thickness d_1 of the target body and the distance a which is the dimension spanned by the interior surface F_9 of the receiving ring 9. The so-called gap is merely shown to reflect an inevitable small space that exists as practical matter for electrically insulating the receiving frame and target arrangement that operate at different electrical potential. (See also page 7, lines 9-23 of the Specification.). The gap is sized to prevent plasma burning within the insulation gap. For that reason, the gap is kept very small. To one of ordinary skill in the art, the relationship of the taper d_0 and the cylindrical target body radius r_1 would not be affected in any meaningful way by the negligible gap. [*Id.*, pages 14-15; emphasis supplied.]

The examiner maintains the position with respect to the "gap" set forth in the ground of rejection, stating that "[t]he specification does not clearly set forth that the lower limit of distance a is directly adjacent to the upper surface of the target and Fig. 1, relied upon for this equation appears to show that the two components are not directly adjacent to each other," and that the Haag declaration is not persuasive because it is based on "teachings beyond the scope of the

original disclosure" (answer, page 7). The examiner points out that appellants have not supported the allegation that "the 'gap' in Fig. 1 is 'exaggerated' as is well known" (*id.*, page 8).

We find that appellants have coupled together the disclosure in the specification and the specification drawings to provide the written description as a whole of the circular magnetron atomization source disclosed in the present application. Indeed, it is apparent that the description of the locations of the features of the magnetron atomization source in the specification requires the reference numerals set forth in **FIGs. 1** and **2** for a complete disclosure of the magnetron atomization source as a whole. *See, e.g.*, page 6, l. 15, and page 7, l. 12, of the specification.

This is further illustrated by the context of the disclosure in the specification and **FIG. 1** with respect to the interior surface $\mathbf{F_9}$ of receiving frame **9** in which we must consider the arguments of appellants and the examiner surrounding the disclosure in the written description as a whole of "distance a." This feature of the magnetron atomization source is introduced as follows:

> A surrounding receiving frame **9** is provided along the edge of the target body **1** and of the circular-ring-shaped end face **7** of the magnetic circuit housing **4** and is electrically insulated from the target body **1** as well as the housing **4** at a dark space distance. The interior surface $\mathbf{F_9}$ of the receiving frame **9** projects in a sloped manner from the edge of the target body 1 against the center axis **A** of the source inward and defines a receiving opening **11** for a circular workpiece disk **13**.
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> . . . .
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> . . . The periphery of the disk **13** rests at the edge of the receiving opening **11** on the receiving frame which . . . forms the peripheral masking element in order to prevent an atomization coating at the edge of the disk and to obtain a transition which is as sharp as possible from the coated surface to the uncoated edge. [Specification, page 7, l. 19, to page 8, l. 13.]

The written description continues with the following:

> The interior surface $\mathbf{F_9}$ of the receiving ring **9** which is minimized in a sloped manner . . . is preferably configured according to the following dimensioning directions:
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> The distance Δ, which is perpendicular with respect to the axis A or generally with respect to a plane of symmetry E_s and is *bridged or spanned by the surface F9*, amounts, relative to the diameter ϕ_{13} of a circular disk 13 or . . . to, generally, $\Delta \leq 20\%$ ϕ_{13}, but preferably to a $\Delta \leq 10\%$ ϕ_{13}, and currently is most preferably dimensioned at $\Delta \approx 15\%$ ϕ_{13}.
>
> . . . .

> The distance a, *bridged or spanned by the interior surface F9*, parallel to the axis A or the plane Es, irrespective of whether Δ is or is not larger than zero, and relative to the distance d_{113} between the new atomization surface center and the disk surface to be coated, amounts to, generally, $0 \leq a \leq 50\%\ d_{113}$, but preferably to $0 \leq a \leq 40\%\ d_{113}$, and is currently most preferably dimensioned at $a \approx 30\%\ d_{113}$. [*Id.*, page 10, l.15, to page 11, l. 15; italics emphasis supplied.]

It would have been readily apparent to one skilled in this art that interior surface $\mathbf{F_9}$ of the receiving ring **9**, which projects in a sloped manner from the edge of the target body 1 against the center axis **A** of the source inward and defines a receiving opening **11** for a *circular* workpiece disk **13**, is further described to have the dimensioning directions provided by the distances "Δ" and "a" each of which is bridged or spanned by the interior surface F_9. This is illustrated in **FIG. 1** with the line representing distance "Δ" extending between the inner most and outer most end points of interior surface $\mathbf{F_9}$, and with the line representing distance "a" extending between the lowest to highest edges of interior surface $\mathbf{F_9}$.

Thus, we find that, as a matter of fact, based on the written description in the specification and the drawings taken as a whole, in extending to the lowest edge of interior surface $\mathbf{F_9}$, distance "a" stops at the upper edge of a "gap," that is, the unidentified area between the interior surface $\mathbf{F_9}$ and target body **1** which apparently represents the electrical insulation between receiving frame **9** and target body **1**, and does *not* extend in any respect to the top of target body **1**.

We find that this substantial evidence in the written description in the specification and drawings taken as a whole clearly supports the examiner's findings that the written description of the magnetron atomization source does *not* show that distance "a" reaches the top of target body **1**. Thus, in the absence of this necessary element of the relationship that an amount of taper d_0 of target body **1** is defined by $0.2\ r_1 \leq d_0 \leq 0.54\ r_1$ as specified in appealed claim 44, as a matter of fact, the claimed subject matter encompassed by appealed claim 44 is *not* "necessarily" described by the written description in the specification and drawings taken as a whole such that one skilled in the art would immediately discern such limitations of the presently claimed invention therein.

We are not persuaded otherwise by appellants' arguments, including the testimonial evidence in the Haag declaration. We find no basis in any of the relationships between different elements of the magnetron atomization source relied on by appellants which as set forth in the written description in the specification and drawings taken as a whole, necessarily factors in the difference between the end of distance "a" and the top of target body **1**, the above identified "gap," thus necessarily providing all of the elements required for the determination of the actual taper of target body 1. This includes the relationship between distance "a" and the maximal distance d_{113}, which expressed as $a \approx 30\% d_{113}$ is the foundation for the claimed subject matter encompassed by appealed claim 44. Indeed, we find no support in the record, including his declaration, for the testimony of declarant Haag that "[t]he amount of the target taper d_0 can be seen from Fig. 1 to be $d_0 = d_{113} - a$ (3) where a . . . [is] a distance between the surface to be coated and the edge of the new atomization surface" (¶ 9).

We further find no basis in the record for appellants' arguments that the "gap" is "irrelevant" in calculating the taper d_0 of target body **1**, and in this respect, appellants do not provide support for the allegations that the "gap" is known in the art to be "about 0.5 to 1 mm in actual practice." We find it indisputable that one skilled in the art would calculate the actual taper of the target body on the basis of the actual dimensions of the target body *per se*, and the notion that this person would be led to an undisclosed preferred actual target body taper range based on a series of calculations founded on ignoring one of the dimensions of the target body is thus without merit. Indeed, even if appellants enter into the record the basis for the allegation of the approximate "gap" dimension "in actual practice," the failure to account for a "gap" of even 0.5 or 1.0 mm overstates target taper by 2.4% – 16.6% based on the relationships $d_0 = d_{113} - a$; $d_{113} \geq 20\% \phi_{13}$; and $a \approx 30\% d_{113}$ for the preferred circular-disk-shaped workpieces having diameters 50 mm, 75 mm and 150 mm (specification, page 9, ll. 15-23, page 10, ll. 4-7, and page 11, ll. 14-15), subtracting 0.5 mm and 1.0 mm "gap" distances in each instance.

Accordingly, upon reconsideration of the facts in the evidence of record as a whole, we determine, as a matter of fact, that one skilled in this art would not have reasonably recognized in the disclosure of appellants' application as filed a written description of the invention encompassed by appealed claims 35 through 37, 44 and 45 which establishes that appellants

were not in possession of the claimed inventions encompassed by these appealed claims, including all of the limitations thereof, at the time the application was filed as required by § 112, first paragraph, written description requirement.

Considering now the ground of rejection under § 112, first paragraph, enablement requirement, appellants rely on the same arguments for this ground of rejection that we considered above. However, the issues considered with respect to the written description requirement involve the written description in the application as filed, which does not include the matter inserted at page 11 of the specification in the amendment filed February 10, 2000 (pages 1-3), while the issues considered with respect to the enablement requirement involve the application as a whole as it stands at the time of appeal. Thus, in the present appeal, a *prima facie* case of non-compliance with § 112, first paragraph, enablement requirement, requires a reasonable explanation, supported by the record as a whole, why the assertions as to the scope of objective enablement set forth in the specification, including the matter added at page 11 in the amendment filed February 10, 2000 (pages 1-3), are in doubt, including reasons why the description of the invention in the specification as so amended would not have enabled one of ordinary skill in this art to practice the claimed invention without undue experimentation, in order to establish under the enablement requirement of the first paragraph of § 112. See *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988); *In re Marzocchi*, 439 F.2d 220, 223-24, 169 USPQ 367, 369-70 (CCPA 1971).

The matter inserted at page 11 of the specification in the amendment filed February 10, 2000 (pages 1-3), teaches that the target taper range specified in appealed claim 44 can be determined using "[t]he distance, a, is preferably approximately 30% d_{113}." The examiner has not established that a value falling within the claimed target taper range can not be obtained by one of ordinary skill in this art following the specification as amended, or that a circular body having a taper within the claimed range cannot be used as a magnetron atomization source, regardless of the fact that the taper d_0 data obtained with the above equation does not reflect the actual taper range for the target body because distance "a" does not extend to the top of target body 1 as we held above.

Accordingly, the examiner has not established a *prima facie* case of non-enablement with a respect to § 112, first paragraph, enablement requirement, and accordingly we reverse the ground of rejection of appealed claims 35 through 37, 44 and 45 on this basis.

The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective September 13, 2003; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

AFFIRMED

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